

The SIMPLEX SYSTEM



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Draftsman And Builder
ROCHESTER, ILLINOIS

For Greater
Efficiency
in Building

The SIMPLEX SYSTEM



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in Building
Efficiency
For Greater

The Simplex System

of Partition and Ceiling Construction

*The most effective and economical method of constructing
sound-proof and fire-proof partitions
and ceilings*

SIMPLEX STEEL PRODUCTS COMPANY

Manufacturers of Metal Specialties for Buildings

1146 Roscoe Street Chicago

Adjoining the Chicago, Milwaukee & St. Paul Switch Track

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SHERIDAN-PLAZA HOTEL
CHICAGO

Simplex Partitions and Ceilings Used Throughout

WALTER W. AHLISLAGER
ARCHITECT

The SIMPLEX SYSTEM



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Exclusive Features of the Simplex System

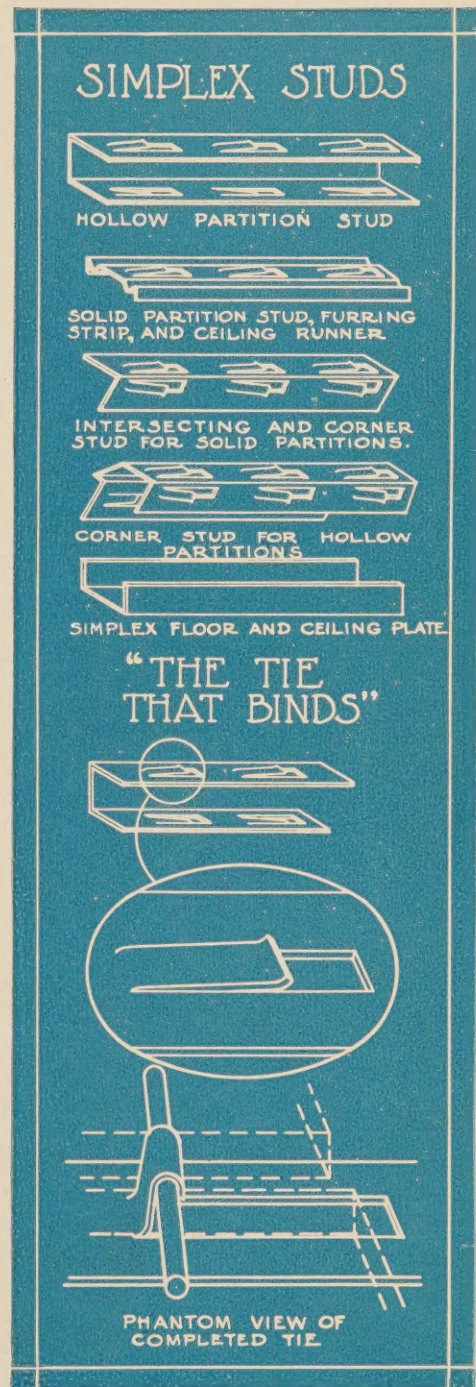
THE Simplex System is a patented method of erecting fire and sound-proof ceilings and non-bearing partitions by the use of plaster board and steel studs. All architects and contractors are more or less familiar with the general features and advantages of this type of construction. The outstanding features of the Simplex System, which make it vastly superior to any other method, are the design of the studs and, more particularly, the method of pinning the plaster boards in place.

Steel Studs Form Framework. The 22 and 24 gauge sheet steel studs—the foundation or framework upon which the partitions and ceilings are constructed—are designed to give the greatest strength and to offer the many strong plaster keys necessary to knit a firm surface and still remain deeply imbedded in the plaster. To meet the requirements of the most approved construction methods, special studs have been designed for ceilings, solid and hollow partitions, corners, and intersecting walls. These studs are made on flat die machines to insure perfectly straight, true forms.

A Stud Style for Every Use. The diagrams of these various studs readily demonstrate how perfectly each type is designed to meet the demands made upon it. The hollow partition stud has a flat shoulder $\frac{1}{2}$ " wide which bears snugly against the plaster board, allowing a maximum air space between the wall faces. The solid partition stud, where thinness is not so essential, is finished with a double-V construction to give it exceptional strength and rigidity. The corner and intersecting studs each accomplish what heretofore has necessitated two or more studs and give, moreover, a much more solid construction. This is due to observing correct principles and providing strong binding plaster keys. The floor plate is used to anchor the studs to the floor and also to the ceiling if desired.

"The Tie That Binds." "The Tie That Binds" is another special feature of the Simplex System. This is the die cut tongue every 3 inches along the stud, which is bent out from the stud and then back to tie with a strong tension around a pin binding the plaster boards securely in place. This method of pinning, or tying, automatically adjusts itself to any variations in the thickness of the plaster boards and leaves a minimum of metal—a bare $\frac{1}{8}$ inch—protruding above the surface at six-inch intervals to be covered over with plaster. As the tongue is bent up, it leaves a $1\frac{1}{2}$ " by $\frac{3}{8}$ " slot for a plaster key. Studs are made and shipped with these tongues protruding slightly above the surface.

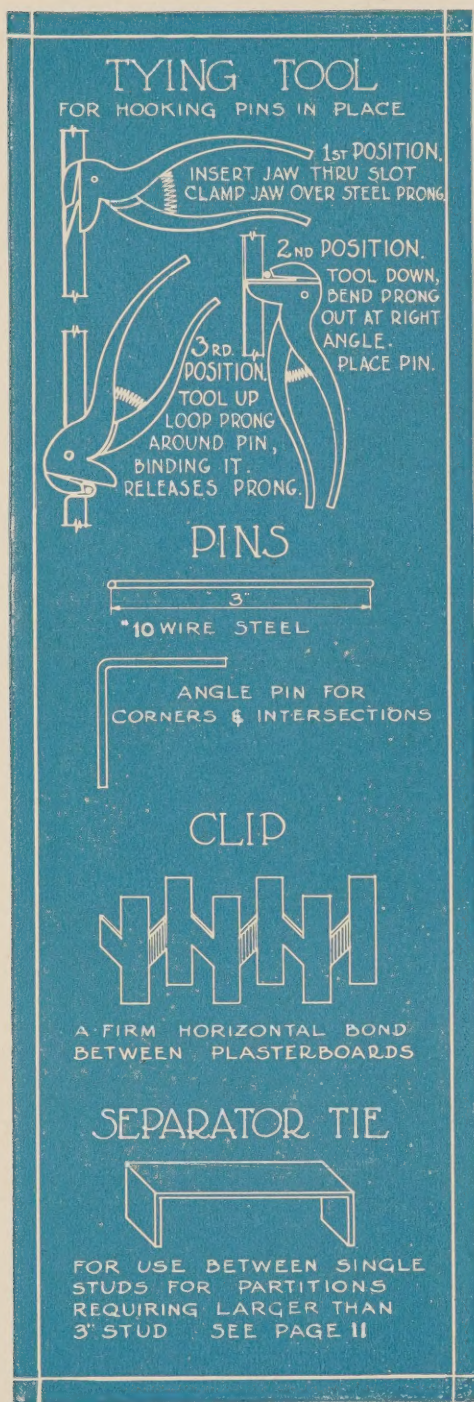
The Tying Tool. A tying tool is used for clinching the tongue—"The Tie That Binds"—over the pin and completes the operation in a fraction of a second. A claw slips through the slot and over the end of the die cut tongue. A downward motion bends this tongue out at right angles. A pin is slipped behind it and a reverse motion of the pinning tool laps the tongue securely over the pin, binding it firmly against the plaster board. The speed at which this can be done permits the erection of a large surface in the shortest possible time.



The Simplex System



Wire Pins Hold Plaster Board. The pins used are straight three-inch pieces of number ten wire which will lay flat on the plaster board. Right angle pins are supplied for corner construction. The spring tension of the steel hook binds the pins and plaster boards firmly to the studs.



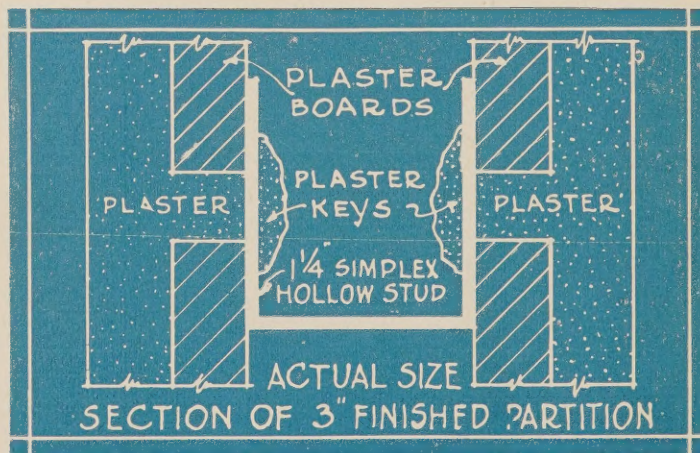
Clips Hold Plaster Board Rigid. Clips are stamped out of steel to slip over each end of adjoining plaster boards—over the top edge of one section and over the bottom edge of the one above it—to hold the two boards $\frac{1}{4}$ " apart and thus provide a strong horizontal plaster key. These clips are so designed as to maintain a perfect alignment of the two adjoining boards and prevent any play between them.

In erecting hollow partitions, clips are used opposite each other on each face of the wall, with, if desired, an I shaped brace locking them together, giving absolute rigidity to the wall. One clip half way between the studs in each horizontal joint is sufficient.

Best for Solid Partitions and Ceilings. The interlocking of plaster boards, steel studs and clips gives an exceptionally even, firm, and rigid plastering surface. The special design of the single stud, with its double-V construction on each edge, gives the extra strength and rigidity necessary for correct solid partition and ceiling construction. As the pins extend but a bare $\frac{1}{8}$ " above the plaster boards, and as a strong net work of plaster keys is provided, a firm non-cracking plaster surface can be applied with a minimum amount of plaster.

Ideal for Hollow Partitions. The unique design of Simplex hollow studs leaves a maximum thickness of dead air space between the wall faces for resistance of fire and sound and for enclosing pipes, wires, and conduits. Hollow studs are made in $1\frac{1}{4}$ " and 3" widths inside measurement for 3" and $4\frac{5}{8}$ " finished partitions. Single studs, used with separator ties, meet the requirements for walls of greater thickness.

Adaptable for Every Type of Building. The nature of the Simplex System—its effectiveness against fire, sound and vermin, its speed of erection and its low cost—makes it the logical method for use in the construction of homes, hotels, apartment or flat buildings, theatres, stores, office buildings, churches and public buildings.



Dominating Points of Superiority

CONSIDERED from every view point, the Simplex System demonstrates its superiority in a way which every architect and contractor will appreciate. Its principles are fundamentally correct, and provisions are made for overcoming the faults and disadvantages of earlier methods of fire-proof construction.

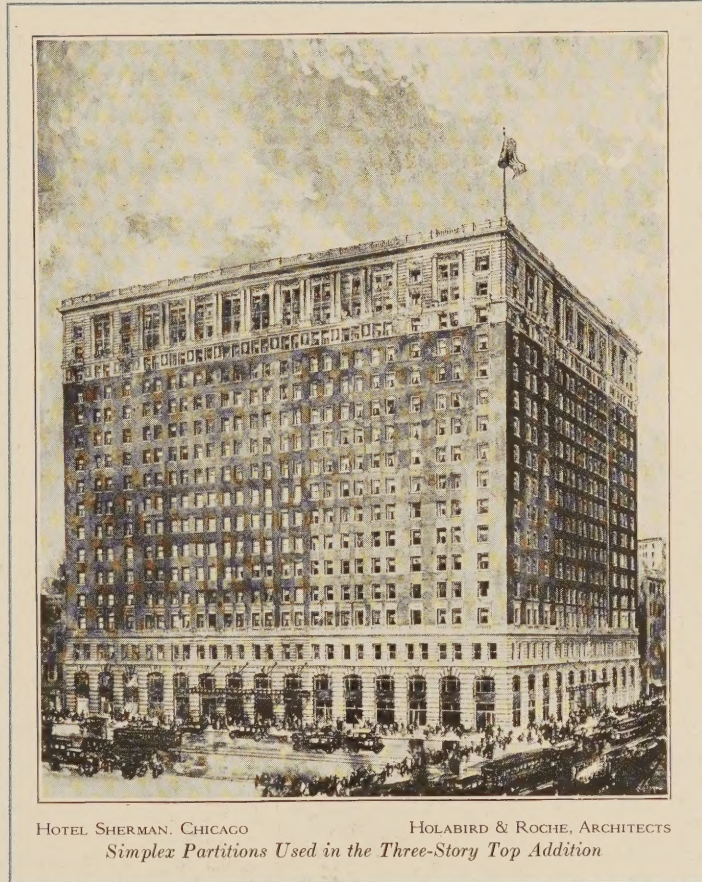
Greater Fire and Sound-Proof Qualities

Simplex partitions and ceilings are almost solid gypsum, proved by laboratory tests and by actual fires to be effective barriers to both fire and sound. Steel is the only conductor used. Its conductivity is minimized, however, by the individual design of the stud with the tie and pin protruding but a small fraction of an inch above the plaster board surface. This, and the large slots providing for plaster keys, keep the steel studs insulated by being deeply imbedded in plaster. The result is that partitions and ceilings so constructed are incombustible and offer great resistance to the transmission of sound and fire.

Maintains Uniformity of Temperature

The same qualities of Simplex construction, which resist so successfully the transmission of fire and sound, also maintain a marked uniformity of temperature in the rooms. The very low conductivity of gypsum plaster board and plaster, and the extra thickness of the dead air space in the Simplex hollow partitions offer excellent insulation, and prevent rapid and extreme variations

of heat and cold. Rooms are cool and pleasant in summer and warm in winter, with a marked conservation of heat and saving of fuel.



HOTEL SHERMAN, CHICAGO

HOLABIRD & ROCHE, ARCHITECTS

Simplex Partitions Used in the Three-Story Top Addition

Lightest Floor Load

A combination of features conspire to make Simplex partitions the lightest per unit of floor space. First, the light weight of the $\frac{3}{8}$ " plaster board which takes the place of one plaster coat is an important saving. They are radically less heavy than the materials of bulky metal lath and channel iron construction. Another element giving light weight is the saving of plaster made possible by the thinness of the hooks and pins holding the plaster board. A three-eighths inch plaster coat will give a very satisfactory surface.

Simplex partitions are, therefore, much lighter than any other type, and in large

buildings reduce the floor load and stress throughout the entire structure so that lighter supporting construction may be figured upon.

Saves Floor Space

In erecting large buildings with a high valuation on floor space, any reduction in the thickness of partitions is a very important consideration. A 3" Simplex hollow partition possesses the strength and the fire resistive and sound-proof qualities of a $4\frac{1}{2}$ " or 5" partition of other materials. It can readily be seen that in large hotels and office buildings, where there are thousands of feet of partitions, the saving of floor space accomplished

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by the use of the thinner partitions, is a very essential factor.

Partitions Strong and Rigid

Every element in the construction of Simplex partitions makes for strength and rigidity. Plaster board itself is notably stiff and strong and offers a rigid plastering base. Supporting this base is a frame-work of unyielding steel studs, constructed to give maximum strength, and interlaced with cross braces and clips.

This staunch foundation is welded together most securely by the strong tension of the Simplex hooks tying the plaster board firmly to the studs, and by the many large plaster keys both along the studs and horizontally between the plaster boards. These special features of the Simplex System not only give structural strength and rigidity to the entire partition but also prevent the plaster from cracking. It must be remembered that this exceptional strength is possessed in spite of the unusual lightness and thinness of Simplex partitions.

Speed of Erection

The simplicity of the Simplex System and the consideration given construction problems enables partitions and ceilings to be erected at remarkable speed. The studs can be readily fastened to floors and ceilings of any material by various methods which will suggest themselves to the mechanic. The large, clean slabs of plaster board are, of course, easy to handle and are quickly put in position.

The chief advantage of the system is the method of fastening the plaster boards by hooking a section of the stud over the pins with a tying tool. Any workman can fasten these steel ties at high speed and erect a partition much faster than he could by nailing or by wiring. As shown on pages 8 and 12, grounds are wired or nailed flat against the plaster board without any delay for notching the ground or stud. Fitting around door bucks, window frames and other irregularities in construction is readily accomplished because the plaster boards are easily cut and shaped.

In considering speed of

erection, it is well to remember that the plaster board serves as one coat of plaster and that there is a minimum of material and debris to take up space and hamper progress during erection.

Minimizes Cost of Construction

Since less metal, less plaster, and less time and labor is required for erecting Simplex partitions and ceilings than for any other type of construction, it is readily seen that the cost of construction is also lower than for any other method. In demolishing a structure, Simplex materials are easily salvaged and have a comparatively high salvage value which may be considered in judging costs.

The method of manufacturing the steel studs and clips—stamping them out on economically operated machines—and the use of wire pins instead of nails, reduces the production cost of materials to a low level. The Simplex System of partition and ceiling construction occupies the unique position of offering the most effective and satisfactory results at the lowest cost.

Another point in this connection is the saving in freight and storage charges for Simplex hollow partitions. The materials required offer only one-fifth of the bulk possessed by materials used with some other methods. One carload of Simplex hollow studs will put up the same amount of partitions as five cars of the more bulky materials, accomplishing a saving of four-fifths of the cost for freight and storage.

Broad Field of Use

These qualities and advantages of the Simplex System are essential in all types of construction. They are to be considered in planning all structures from the small residence or store to the mammoth hotel or office building.

The value of fire-proof and sound-proof methods is indisputable. Maintaining light floor loads, saving floor space and still securing strong substantial construction are likewise important considerations. But to combine all of these factors, and to accomplish it at a low cost through economies of quick erection and saving in materials—that is a crowning feature.

It is this combination of qualities and advantages which marks the Simplex System and makes it particularly adapted to wide field of uses.



CHINESE MERCHANTS HOTEL. EDWARD D. SHANK, ARCHITECT.
DETROIT

Simplex Partitions and Ceilings Used Throughout



General Information Regarding Simplex Solid Partitions

For Details of Construction see Plate on Page 8

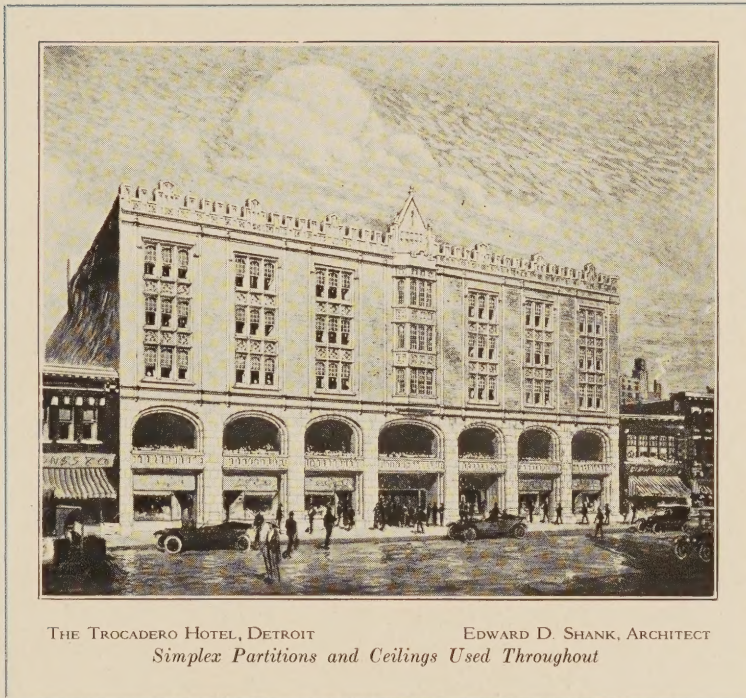
Adaptability

THE construction requirements of closets, enclosed stairways, shafts, false beams and columns, and for all non-bearing partitions where air or enclosing space is not required, are admirably met by Simplex Solid Partitions. Their thinness, rigidity, speed of erection and light weight, and their high fire and sound-resisting qualities meet every requirement.

Strength of Partition

Such a partition has great strength in spite of its thinness. Plaster board itself is very rigid. A 12x18 inch section $\frac{3}{8}$ " thick supported on knife edge bearings spaced 16 inches, and loaded on a similar bearing midway between the two, will sustain a 40 lb. stress across the fibre of the surfacing and 20 lbs. parallel with it.

The character of the plaster board covering is such that when plaster is applied it forms a bond that fuses the board and plaster into a monolithic slab two inches thick. Simplex studs, with "The



THE TROCADERO HOTEL, DETROIT

EDWARD D. SHANK, ARCHITECT

Simplex Partitions and Ceilings Used Throughout

Tie that Binds," the large plaster keys, and Simplex steel clips, make an unsurpassed reinforcement for this solid plaster slab partition. The patented features of the stud permit a perfectly constructed wall using, if desired, a $\frac{3}{8}$ " plaster coat on one side and $\frac{3}{4}$ " on the other, finishing to a $1\frac{1}{2}$ " thickness.

Light Weight of Partition

The design of the stud is such that a minimum of metal is used.

Plaster board is light, averaging about 1700 lbs. per thousand square feet. The method of pinning boards to studs effects economy of plaster. These three factors result in a finished partition of materially lighter weight than possible to secure with any other method.

Saves Time and Labor

Every element in Simplex construction has been studied and arranged with a view of saving time in erection. Special studs are provided to meet special conditions. Anchoring to the floor and

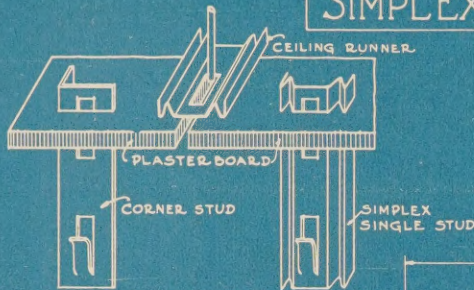


Section of Simplex Single Stud, One Half Actual Size

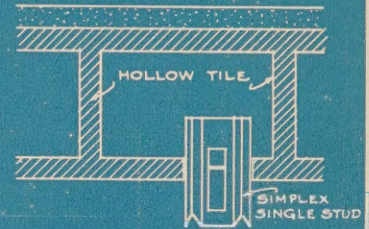
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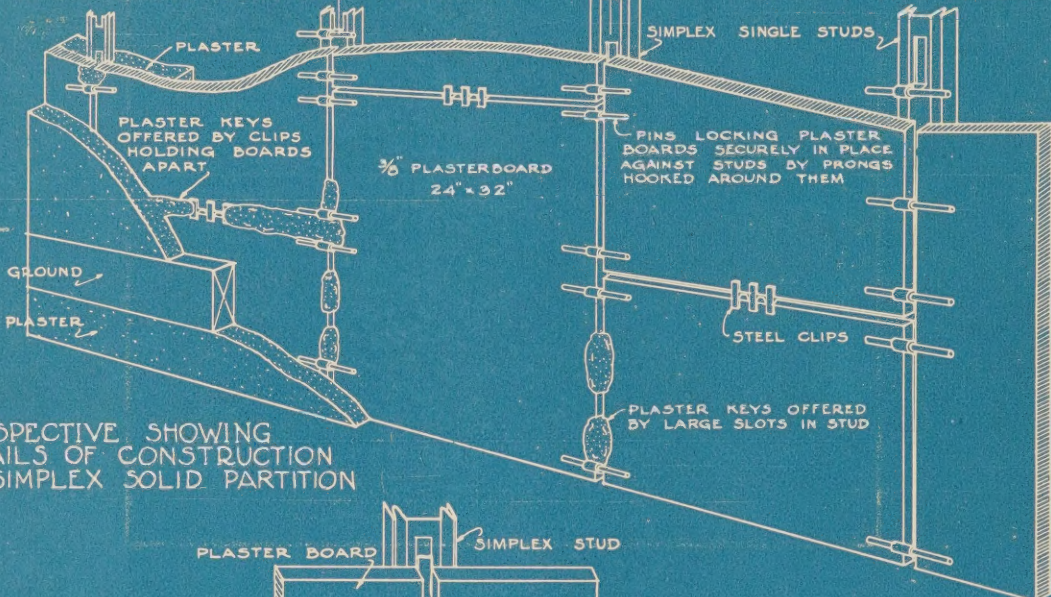
SIMPLEX SOLID PARTITIONS



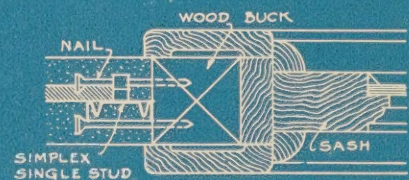
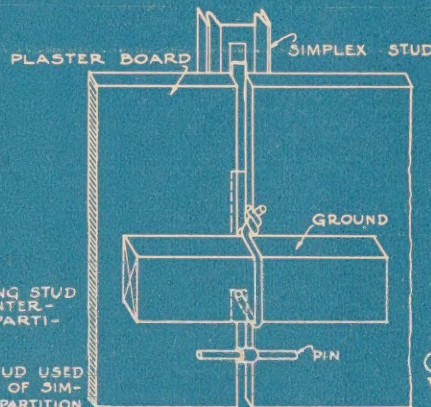
METHOD OF FASTENING SIMPLEX STEEL STUDS TO SUSPENDED CEILING CONSTRUCTION



METHOD OF FASTENING TO HOLLOW TILE CEILINGS

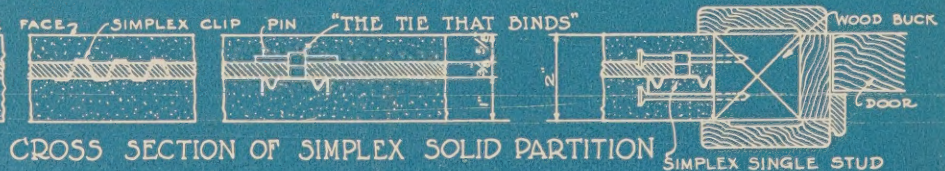
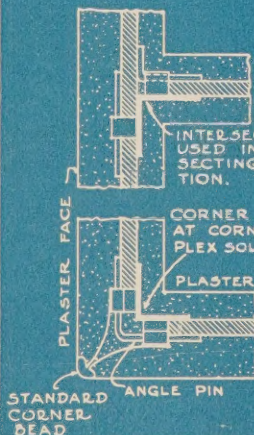


PERSPECTIVE SHOWING DETAILS OF CONSTRUCTION OF SIMPLEX SOLID PARTITION



DETAIL OF WINDOW JAMB

GROUNDS FASTENED BY WIRING THRU STUDS



CROSS SECTION OF SIMPLEX SOLID PARTITION



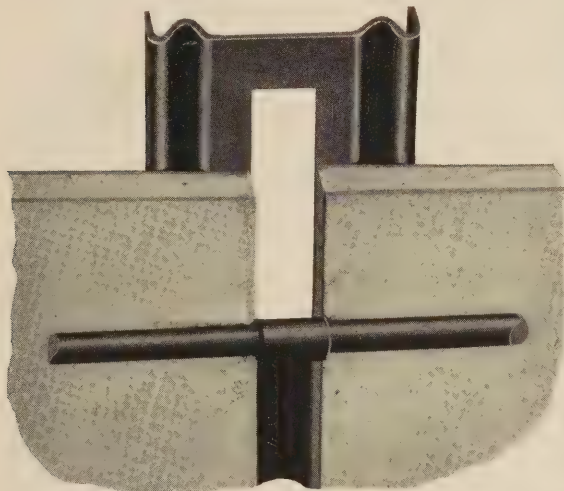
ceiling is quickly and easily accomplished. Plaster boards are clean and convenient to handle and can readily be cut to fit around irregularities in building formations. But the big time saving feature is the Simplex method of pinning the plaster boards to the studs. Gypsum plaster can be applied on this foundation immediately and will dry quickly.

Low Cost of Erecting

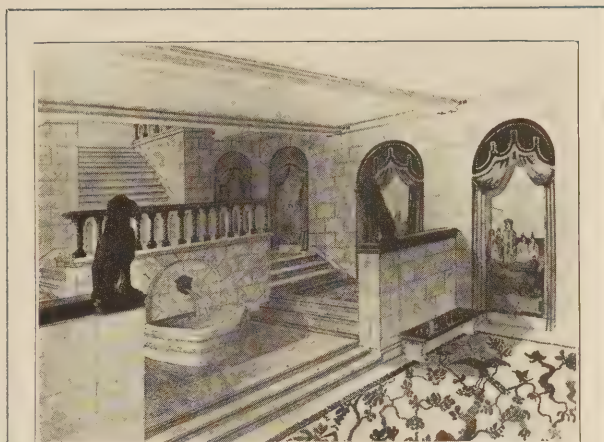
The various materials used in Simplex System construction can be made very economically and are sold at a comparatively low price. This, combined with the saving in time, labor and materials effected, makes it a low cost method of building.

Fire-resistive Qualities

As the shape of the studs and the method



Actual Size Section of Simplex Single Stud With Plaster Boards Attached, Showing Slot, Pin, and Method of Fastening



MAIN STAIRWAY
THE TROCADERO HOTEL, DETROIT EDWARD D. SHANK, ARCHITECT
Showing Simplex Ceiling Completed

of pinning the plaster boards keeps all the steel—the only conductor used—deeply imbedded in plaster, a Simplex solid partition is fire-resistive to a high degree. Gypsum plaster and gypsum plaster board are universally recognized as effective fire-proofing materials. A 2" wall of this type construction was subjected to a one hour fire test, with an average temperature of 1700 degrees Fahrenheit during the last half hour. This was followed by a 2½ minute application of a hose stream from a 1½" nozzle at 30 lb. nozzle pressure. At no stage during the test did cracks develop in the exposed surface of the partition; neither smoke nor flame was permitted to pass.

A Simplex Solid Partition adequately meets every demand made upon it.

Specifications for Solid Partitions

This contractor to erect partitions where shown, by the Simplex System, using Simplex solid partition studs anchored to floor and ceiling by approved method, and properly lined up to insure a straight wall. Studs to be placed 24½ inches on centers. Corner and intersecting wall studs to be used where required.

After studs have been properly placed, erect ¾-in. x 24 in. x 32 in. gypsum plaster boards, securing them to studs by means of wire pins 3 inches long, of not less than No. 10 gauge thickness. Pins to be held in place by prongs, which are integral with the Simplex studs, using a Simplex tying tool to hook prongs tightly over pins, and securely bind plaster board to studs. Pins to be 6 inches apart or less.

The bottom row of plaster boards to be full size and half size, alternated to give broken joints. In the center of each horizontal joint between plaster boards, furnish and place one clip to separate boards not less than ¼-inch, which separation and stud slots on vertical joints are to be used for plaster keys.

Apply gypsum plaster to entire surface on both sides of partition, applying brown and white coats, white coat to be not more than ⅛-inch thick. Do not wet or sprinkle plaster boards before applying plaster. All plaster to be mixed according to manufacturer's specifications, and to be applied the proper thickness to be flush with grounds when completed. All grounds will be furnished and set by carpenter contractor.

The SIMPLEX SYSTEM



Practical Suggestions for Erection of The Simplex System

AS THE workmen become more familiar with Simplex materials and methods, they will discover many ways of their own for handling the details which will speed up the work, save materials, and give satisfactory results.

Tongues to Point Upward

Studs must be set with the tongues pointing upward to permit the tying tool to be inserted in the slots so that the tongue may be bent out and hooked over the pins. To line up the plaster boards correctly and prevent their being placed over the slots, an average of two tongues to the board should be bent out from the stud as guides.

Studs Spaced on 24½" Centers

By erecting the studs on 24½" centers, full size plaster boards will fit exactly in place on the shoulder of the studs. This eliminates cutting and fitting, saves a big waste of materials, and avoids much extra and useless work.

Break Plaster Board Joints

When applying the plaster boards to the framework of studs, start each tier of boards at the floor, alternating with full and half size pieces. This gives a staggered arrangement to the horizontal joints of the plaster boards and affords maximum strength. If the joints matched and formed a long horizontal joint, it would mean a greatly weakened partition.

Splicing for High Partitions

For partitions over twelve feet high, and for ceilings, studs can be overlapped several inches and bound together when hooking the plaster boards in place. This provides a very strong splice, utilizes short lengths of studs, and meets special requirements of construction.

Pin Only Where Necessary

To insure having ties at essential points, more hooks are provided for along the studs than are required for binding the plaster boards in place. Use those which come near the ends of each section of plaster board and every second one in between. The others are left in their original position to be

used if studs are salvaged and re-erected. The used hooks can be straightened out and re-used if desired.

Wire Fastenings Made Easy

The large slots for plaster keys also provide apertures through which a mechanic can quickly and securely wire his grounds, ceiling hangers, corner beading, and other details. The work is thus made easier and accomplished more quickly.

Use Correct Studs

For solid and hollow partition corners, or intersections, use the correct studs that are specially designed for these purposes. They insure correct, satisfactory construction, save unnecessary waste of materials, and are easily and more quickly erected. In ordering Simplex materials, contractors should check over their plans carefully and specify the exact number of corner studs and intersecting studs required.

Enclosing Pipes—Conduits

The hollow partition studs will enclose conduits a trifle larger than the stud measurements. This can be done with entire satisfaction as the plaster boards can be sprung slightly on each side of the partition and plastered over so as not to throw the surface out of alignment. Pipes and wires can be installed with comparative ease after partitions and ceilings are completed where the Simplex System is used. When pipes larger than 3 inches in diameter are to be enclosed in a partition, use two single studs with Separator Ties as explained on page eleven.

Fastening Grounds

With hollow partitions the grounds may be nailed on instead of wired. To nail them, 4-inch pieces of lumber the thickness of the stud are inserted as cores in the channel of the studs at the heights desired. The four inch lengths insure matching with a slot opening. Grounds are then placed in position and fastened by nailing through the slot into the wooden core.

Another method is for two men working on each side of a partition to fasten the grounds by nailing through the partition and into the ground on the opposite side.



Special Data and Scientific Tests for Simplex Hollow Partitions

For Details of Construction see Plate on Page 12

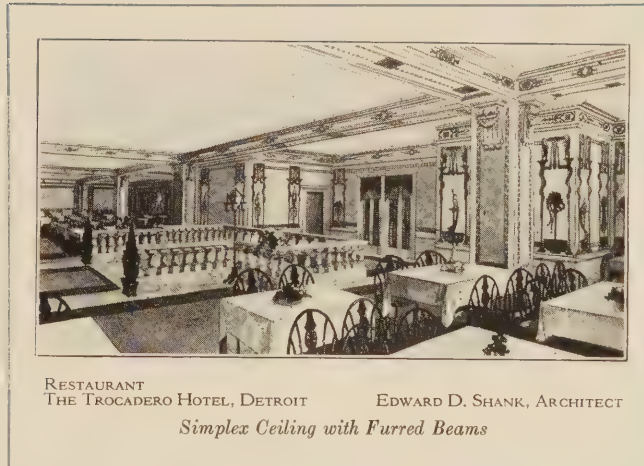
Adaptability

WHEREVER thin, light-weight, non-bearing partitions are required which must conceal pipes, wires or conduits, or allow an extra thick enclosed air space, or which will provide greater fire and sound-proof qualities than a solid partition, Simplex Hollow Partitions offer exceptional advantages.

Partitions Any Thickness

Only two sizes are made in regular hollow studs — the $1\frac{1}{4}$ " stud for 3" finished partitions, and the 3" stud for walls to finish $4\frac{5}{8}$ " thick. Investigation has proved that partitions thicker than these can be constructed most satisfactorily by using two single studs bound and braced with separator ties. The plate on page twelve illustrates the details of erection.

Separator ties are strips of sheet steel, made in any length, with a shoe bent down on either end which fits snugly between the outer flanges of the single stud. By bending the flanges in over this shoe with pliers the separator tie is locked firmly in place. They should be set about every two feet along the stud. With this construction, the enclosed air space can be made as wide as desired and will prove a very effective means of stabilizing temperature in adjoining rooms, making them cooler in summer, and warmer in winter, with



a very material saving in fuel.

Highly Fire-resistive

A Simplex hollow partition is an exceptionally effective barrier to fire. It is in reality two separate fire walls. Each face consists of almost an inch of solid gypsum without the presence of any combustible material. A fire test for such a hollow partition, 3" thick with $\frac{3}{8}$ " gypsum plaster boards and a registered the follow-

$\frac{1}{2}$ " coat of gypsum plaster registering the following degrees Fahrenheit:

Period of Readings	Fire Temperature	Exterior Face Temperature	Interior Space Temperature
0 min.	71°	74°	71°
10 min.	1520°	77°	209°
20 min.	1602°	107°	212°
30 min.	1610°	133°	392°
40 min.	1764°	153°	616°
50 min.	1700°	167°	824°
60 min.	1455°	175°	869°

These temperatures unquestionably prove the low heat conductivity and the fire-resistive properties of the partition. The fire was followed by a severe water application, and only five hair cracks developed on the exposed surface. At no time during the entire test was smoke or fire permitted to pass.

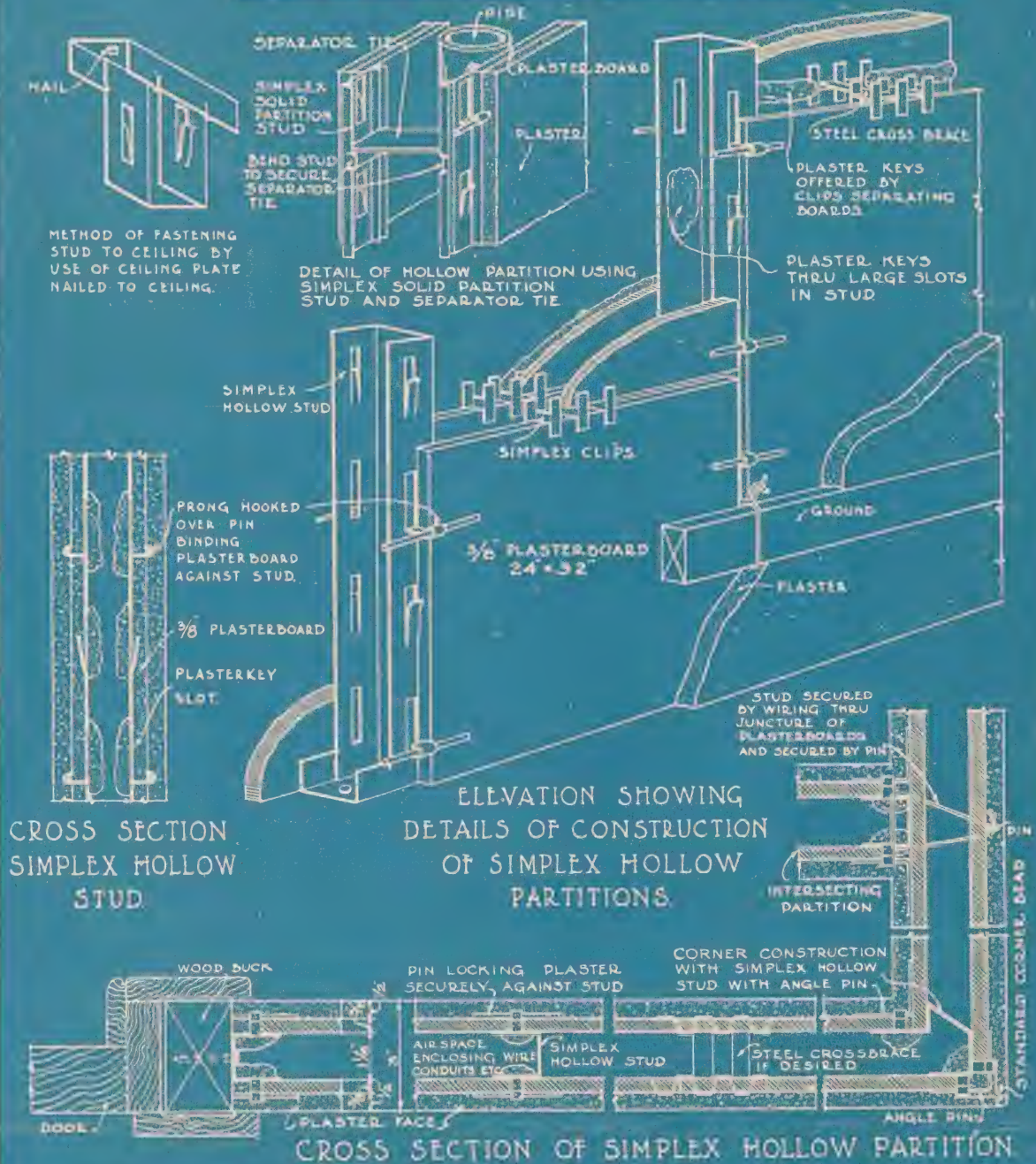


Section of Simplex Hollow Stud, One Half Actual Size

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SIMPLEX HOLLOW PARTITIONS.



Effective Barrier to Sound

The density and toughness of plaster boards give them a low degree of sound conductivity. Tests have proved gypsum plaster board and plaster partitions with steel studs to be three times more sound-proof than a wall of wood lath and plaster. It is important to consider that with Simplex hollow partitions the transmission of sound is resisted by two separate sound deadening walls and an enclosed, insulating air space.

Light Weight of Partition

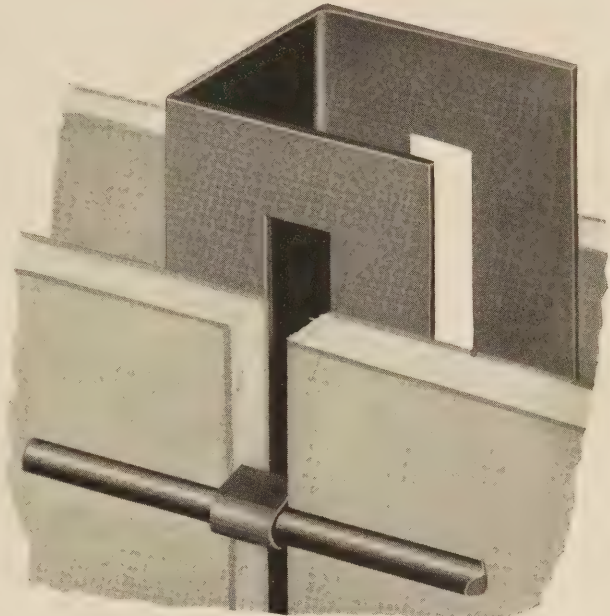
This effective fire-resistive and sound-proof construction is secured without loading the floor with heavy, bulky materials. Comparative weights of various types of hollow partitions are shown in the following table:

Material	Thickness Finished	Pounds per Square Foot
Clay Tile 4x12x12"	5½"	32.16
Clay Tile 3x12x12"	4½"	29.12
Gypsum Block 4x12x30"	5¾"	18.00
Gypsum Block 3x12x30"	4½"	15.00
Simplex ⅜" Plasterboards 1¼" stud	3"	10.50

As the only additional weight for thicker than 3" Simplex partitions is the extra metal in the stud, there is but little variation from the 10.5 pound weight given. Although much lighter and thinner than the other materials, Simplex partitions afford better protection.

Economies of Small Bulk

The small bulk of Simplex materials enables them to be both shipped and stored on the job in only one fifth of the space ordinarily required for materials used in some of the other types of hollow partitions. This not only means a great saving of money in freight and storage rates, but solves the problem of finding room on the job to store the materials.



Actual Size Section of Simplex Hollow Stud for 3-inch Partitions, Showing Slots, Method of Fastening Plaster Boards, and Air Space Between Faces

Exclusive Features

The same characteristics, with attending savings in time and materials, and labor costs, as described for Simplex solid partitions, holds true generally for Simplex hollow partitions. If desired, plastering can be finished ⅜" thick with absolute satisfaction, due to two exclusive features of Simplex studs. One feature is "The Tie That Binds" which provides many large plaster keys and permits metal to extend only ⅛" above the surface of the plaster board at points of fastening. The other is the fact that these studs are stamped out on flat die machines, insuring perfectly flat, true studs and eliminating bows in the partition. The plastering surface is perfectly flat and may be covered level with a minimum of plaster.

Specifications for Hollow Partitions

This contractor to erect hollow partitions where shown by the Simplex System, using Simplex hollow studs anchored to floor and ceiling by approved method, and properly lined up to insure a straight wall. Studs to be placed 24½ inches on centers. Corner studs to be used where required.

After studs have been properly placed, erect ⅜ in. x 24 in. x 32 in. gypsum plaster boards on each side of partition, securing them to studs by means of wire pins 3 inches long, of not less than No. 10 gauge thickness. Pins to be held in place by prongs integral with the Simplex studs, using a Simplex tying tool to hook prongs tightly over pins and securely bind plaster boards to studs. Pins to be 6 inches apart or less.

The bottom row of plaster boards matching on oppo-

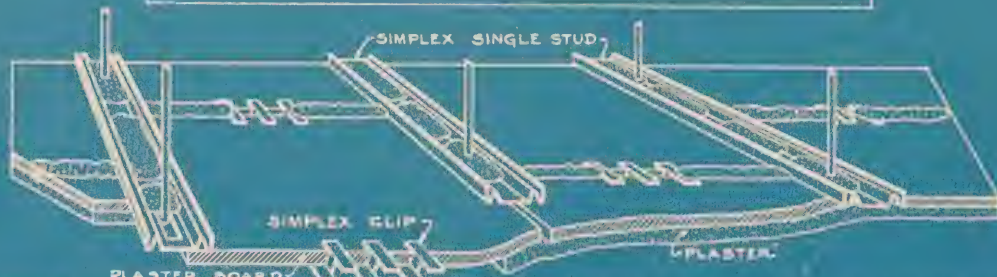
site faces to be full and half size, alternated to give broken joints. In center of each horizontal joint between plaster boards, furnish and place one clip to separate boards not less than ¼ inch, which separation and stud slots on vertical joints are to be used for plaster keys. Steel cross braces to be fastened to matching clips if necessary.

Apply brown and white coats of gypsum plaster to entire surface on both exterior faces of partition: white coat to be not more than ⅛ inch thick. Do not wet or sprinkle plaster boards before applying plaster. All plaster to be mixed according to manufacturer's specifications, and to be applied the proper thickness to be flush with grounds when completed. All grounds will be furnished and set by carpenter contractor.

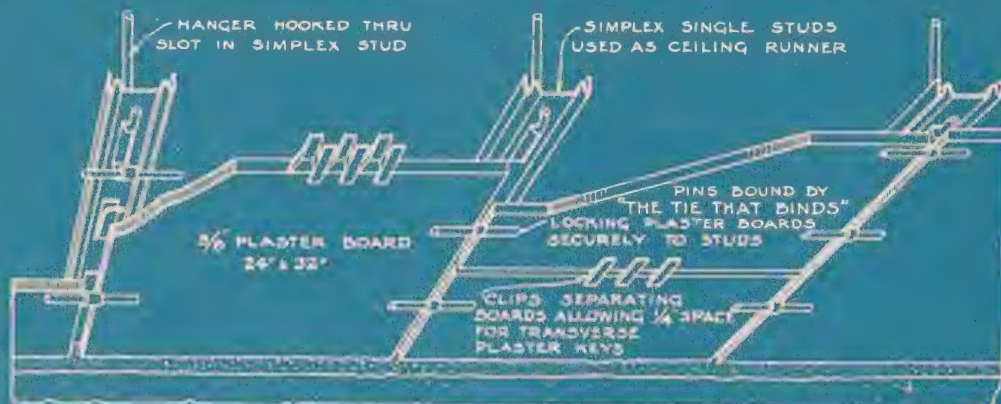
The SIMPLEX SYSTEM



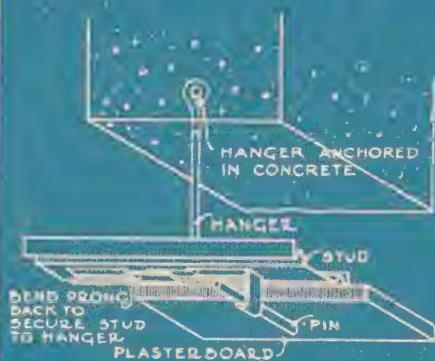
DETAILS OF CONSTRUCTION OF SIMPLEX SUSPENDED CEILINGS



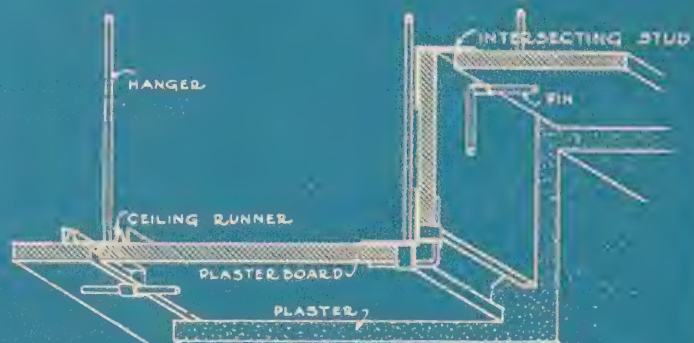
UPPER SURFACE OF SIMPLEX SUSPENDED CEILING SHOWING NETWORK OF PLASTER KEYS ALONG STUDS AND BETWEEN PLASTER BOARDS



PLASTERING SURFACE OF A SIMPLEX SUSPENDED CEILING



DETAIL OF METHOD OF FASTENING STUD TO HANGER



METHOD OF FURRING AROUND BEAMS OR PIPES IN CEILINGS

Simplex Suspended Ceilings

Rigid Efficient and Economical

Details of Construction Shown by Plate on Page 14

THE Simplex System affords an ideal construction for suspended ceilings, or for ceilings attached directly to the joists. Such ceilings are strong, rigid, fire-resistive and sound-proof, and may be quickly erected at a very economical cost.

A Strong Rigid Surface

As the studs, ties and clips used in this construction are strong, and as the plaster board furnishes a stiff unyielding core, the ceiling has a level, rigid base which will not sag or buckle. When the plaster coats are added, the innumerable large keys along the studs and transverse joints, and the strong bond between the plaster and the boards greatly reinforce and strengthen the finished ceiling. A Simplex ceiling possesses a degree of strength sufficient to support its own weight many times over and sustain heavy lighting fixtures with absolute safety.

Fire and Sound-Proof

Constructed with the same materials and methods as Simplex partitions, Simplex ceilings have the same effective fire and sound-proof properties. There is nothing inflammable in their make up, and the steel stud is deeply embedded in gypsum plaster, a known resistant. The details of construction prevent the transmission of fire or sound over the partitions.

Announcement was made in Bulletin No. 18 issued by the Department of Building and Safety Engineering, Detroit, that ceilings erected by fastening plaster boards to steel runners nailed transversely on wood joists are deemed fire-proof according to Section 38 of the State Housing Code. This announcement is a strong endorsement for the Simplex System. When erected in this manner, Simplex studs are fastened with 8-penny nails

with only the narrow edges of the metal in contact with the ceiling joist. Plenty of air space is left on all sides in which cooling air currents may circulate.

Economical to Construct

All details of erection make for rapid construction, cutting labor costs down to a minimum. As the costs of materials are low compared with other methods, the Simplex System affords a very economical, as well as efficient means of ceiling construction.

Flexibility of Handling

It is a simple matter to provide for ceilings of varying heights as are frequently required. Ceilings are suspended before partitions are put in, and by adjusting the lengths of hangers, ceilings of various heights are accommodated. Partitions when put in are run up to whatever heights are required. The corner studs are of invaluable assistance in such construction.

Furring around beams, ventilating ducts and other obstructions can be handled very simply with the Simplex System as shown on the opposite page. In all these formations, the ease with which plaster board can be cut and fitted is of immeasurable value and enables work to be done quickly and easily which would otherwise be practically impossible or very expensive.

Light Weight of Ceilings

The combination of light weight metal parts, plaster boards, and only two coats of plaster results in a strong but light weight ceiling. A Simplex ceiling will average about 50% less than metal lath construction.

Specifications for Simplex Ceilings

This contractor to erect suspended ceilings by the Simplex System. Securely anchor to joists, hangers of No. 9 wire, length as indicated, and placed 24½ inches on centers along joists. Form shoe by bending end of hanger to a right angle in a direction transverse with joists.

Suspend Simplex single studs transversely with joists by inserting shoe through stud slots and tying in a suitable manner. Corner and intersecting studs to be used where required.

After studs have been properly placed erect ¾ inch x 24 inch x 32 inch gypsum plaster boards, securing them to studs by means of wire pins 3 inches long, or with angle pins where required, of not less than No. 10 gauge thickness. Pins to be held in place by prongs,

integral with studs, using a Simplex tying tool to hook prongs tightly over pins which are to be 6 inches apart or less.

Plaster board courses to be started with full and half size pieces alternated to give broken joints. In center of each joint between plaster boards, furnish and place one clip to separate boards not less than ¼ inch, which separation and stud slots are to be used for plaster keys.

Apply brown and white coats of gypsum plaster to entire under surface of the ceiling. White coat to be not more than ⅛ inch thick. Do not wet or sprinkle plaster boards before applying plaster. All plaster to be mixed according to manufacturer's specifications and to be applied to be the proper thickness when completed.

The SIMPLEX SYSTEM



The Simplex System

Represents the Most Perfect Type of Construction for Fire and Sound-Proof Non-Bearing Partitions and Suspended Ceilings

THE exceptional efficiency and economy of Simplex System construction is thoroughly demonstrated by the outline on the preceding pages of the various elements utilized, the principles governing their erection, and the advantages they offer.

Every architect, contractor and material dealer interested in fire and sound-proof construction, will recognize the unique and original features which account for the indisputable supremacy of non-bearing partitions and suspended ceilings erected with the Simplex System.

A brief summary of these points of advantage shows the following ten important features possessed in a high degree by this latest perfection in steel building methods.

1. Fire-Proof

The entire absence of inflammable or combustible materials on the one hand, and the presence of large amounts of gypsum, a universally-recognized, potent resistant to fire, on the other, combined with a steel stud that is deeply imbedded in plaster results in a highly fire-proof construction.

2. Sound-Proof

The same general properties of gypsum plaster board and plaster, and the design of the steel studs, which make the Simplex System so fire-proof, also make it sound-proof and prevent the transmission of noises from one room to another.

3. Healthful

The insulating properties of the materials used establish and maintain a uniform temperature conducive to better health. The smooth, crackless surfaces and tight joints or bonds eliminate spaces where dust or filth can collect, or where insects or vermin may pass.

4. Thin—Economizes Space

As demonstrated, Simplex partitions can be erected that are as effective as other partitions of

1" to 2½" greater thickness. In large buildings this effects a saving of many hundreds of square feet of valuable floor space.

5. Light Weight

The principles of construction devised and followed utilize lighter weight materials and economize on the quantity. The result is a finished partition of light weight which, in large buildings, lessens the floor loads and stress throughout.

6. Rigid

In spite of the many vitally essential characteristics and the light weight, Simplex System construction is exceptionally strong and rigid, due to the design of the stud, to "The Tie That Binds," and also to the rigid nature of the materials used.

7. Economical

The many features aiding speedy erection at a big saving of labor costs, the economies in materials, and the moderate cost of the materials used make the Simplex a very economical system.

8. Salvage Value

The character of the studs and fastenings permits the easy salvaging and use for reconstruction of Simplex materials. This acts also as a reduction in costs.

9. Encloses

Pipes, wires and conduits may be enclosed satisfactorily with Simplex construction without trouble or extra work, giving better construction more quickly.

10. Adaptability

One of the crowning features of the Simplex System is its pronounced fitness for any type of building. Its wide range of adaptability makes it profitable for dealers to carry as a stock building material.

In planning new buildings remember the fitness and worth of the Simplex System for Partitions and Ceilings. Special information regarding any job can always be secured by writing to us. Architects can secure upon request actual size working drawings of details for use as guides in preparing plans.



NATIONAL STEEL I JOISTS

Total Safe Load in Pounds Per Square Feet of Floor Area

For Live Load Deduct Weight of Floor Construction

Fibre Stress Not Exceeding 16000 Lbs. Per Square Inch

No Deflections Greater Than 1/360 of the Span

JOIST SPACED 12" ON CENTERS

Size	4"	5"	6"	7"	8"	9"	10"	10"-s	11"	12"	Size
Weight	3.7	4.3	4.9	5.8	6.8	7.7	8.7	9.5	10.7	12.0	Weight
6'	381	527	703	---	---	---	---	---	---	---	6'
7'	280	387	516	---	---	---	---	---	---	---	7'
8'	214	296	395	547	---	---	---	---	---	---	8'
9'	152	234	312	432	583	718	885	---	---	---	9'
10'	110	190	253	350	472	582	717	---	---	---	10'
11'	83	144	209	289	390	481	593	---	---	---	11'
12'	64	110	176	243	328	404	498	---	---	---	12'
13'	---	87	139	207	279	345	425	482	585	695	13'
14'	---	70	111	179	241	297	366	414	504	598	14'
15'	---	---	91	146	210	258	318	361	438	522	15'
16'	---	---	75	120	184	228	280	318	386	458	16'
17'	---	---	---	100	154	202	248	281	342	406	17'
18'	---	---	---	84	130	180	222	251	304	362	18'
19'	---	---	---	---	110	153	198	225	274	325	19'
20'	---	---	---	---	95	132	179	203	247	293	20'
21'	---	---	---	---	---	114	156	177	224	266	21'
22'	---	---	---	---	---	99	136	154	204	242	22'
23'	---	---	---	---	---	---	---	135	179	222	23'
24'	---	---	---	---	---	---	---	118	158	204	24'
25'	---	---	---	---	---	---	---	105	140	181	25'
26'	---	---	---	---	---	---	---	93	124	161	26'

NOTE—The above safe loads assume that the Joists are bridged laterally as in the standard floor construction.

JOIST SPACED 19" ON CENTERS

Size	4"	5"	6"	7"	8"	9"	10"	10"-s	11"	12"	Size
Weight	3.7	4.3	4.9	5.8	6.8	7.7	8.7	9.5	10.7	12.0	Weight
6'	241	332	443	---	---	---	---	---	---	---	6'
7'	177	244	326	---	---	---	---	---	---	---	7'
8'	135	187	250	346	---	---	---	---	---	---	8'
9'	96	148	197	273	---	---	---	---	---	---	9'
10'	70	120	160	222	298	368	452	513	---	---	10'
11'	53	90	132	183	247	304	375	423	---	---	11'
12'	41	70	111	153	207	256	315	356	---	---	12'
13'	---	55	88	131	176	218	269	304	369	439	13'
14'	---	44	70	113	152	188	231	262	318	378	14'
15'	---	---	57	92	132	163	201	228	277	329	15'
16'	---	---	47	76	116	144	177	200	244	290	16'
17'	---	---	---	63	98	127	157	177	216	257	17'
18'	---	---	---	53	82	114	140	159	192	229	18'
19'	---	---	---	---	70	97	126	142	173	206	19'
20'	---	---	---	---	60	83	113	128	156	185	20'
21'	---	---	---	---	---	72	99	112	141	168	21'
22'	---	---	---	---	---	62	86	97	129	153	22'
23'	---	---	---	---	---	---	---	85	114	140	23'
24'	---	---	---	---	---	---	---	75	100	129	24'
25'	---	---	---	---	---	---	---	66	88	114	25'
26'	---	---	---	---	---	---	---	59	78	102	26'

NOTE—The above safe loads assume that the Joists are bridged laterally as in the standard floor construction.

JOIST SPACED 16" ON CENTERS

Size	4"	5"	6"	7"	8"	9"	10"	10"-s	11"	12"	Size
Weight	3.7	4.3	4.9	5.8	6.8	7.7	8.7	9.5	10.7	12.0	Weight
6'	286	395	526	---	---	---	---	---	---	---	6'
7'	210	290	387	---	---	---	---	---	---	---	7'
8'	161	222	297	410	---	---	---	---	---	---	8'
9'	114	176	234	324	---	---	---	---	---	---	9'
10'	83	142	190	263	354	437	538	608	---	---	10'
11'	62	108	157	217	292	361	445	503	---	---	11'
12'	48	83	132	183	246	303	374	423	---	---	12'
13'	---	65	104	155	210	259	319	361	438	521	13'
14'	---	52	84	134	181	223	275	311	378	448	14'
15'	---	---	68	110	158	194	239	271	328	392	15'
16'	---	---	56	90	138	171	210	238	289	344	16'
17'	---	---	---	75	116	151	186	211	257	305	17'
18'	---	---	---	63	98	135	166	188	228	272	18'
19'	---	---	---	---	83	115	149	169	205	244	19'
20'	---	---	---	---	71	99	135	152	185	220	20'
21'	---	---	---	---	---	85	117	133	168	200	21'
22'	---	---	---	---	---	74	102	116	153	182	22'
23'	---	---	---	---	---	---	---	101	135	167	23'
24'	---	---	---	---	---	---	---	89	118	153	24'
25'	---	---	---	---	---	---	---	79	105	136	25'
26'	---	---	---	---	---	---	---	70	93	121	26'

NOTE—The above safe loads assume that the Joists are bridged laterally as in the standard floor construction.

JOIST SPACED 24" ON CENTERS

Size	4"	5"	6"	7"	8"	9"	10"	10"-s	11"	12"	Size
Weight	3.7	4.3	4.9	5.8	6.8	7.7	8.7	9.5	10.7	12.0	Weight
6'	191	264	351	---	---	---	---	---	---	---	6'
7'	140	194	258	---	---	---	---	---	---	---	7'
8'	107	148	198	274	---	---	---	---	---	---	8'
9'	76	117	156	216	292	359	---	---	---	---	9'
10'	55	95	127	175	236	291	359	406	---	---	10'
11'	42	72	105	145	195	240	296	335	---	---	11'
12'	32	55	88	122	164	202	249	282	---	---	12'
13'	---	43	70	104	140	172	212	240	292	348	13'
14'	---	35	56	89	120	149	183	207	252	299	14'
15'	---	---	45	73	105	129	159	180	219	261	15'
16'	---	---	37	60	92	114	140	159	193	229	16'
17'	---	---	---	50	77	100	124	140	171	203	17'
18'	---	---	---	42	65	90	111	125	152	181	18'
19'	---	---	---	---	55	77	99	113	137	162	19'
20'	---	---	---	---	47	66	90	101	123	146	20'
21'	---	---	---	---	---	57	78	89	112	133	21'
22'	---	---	---	---	---	49	68	77	102	121	22'
23'	---	---	---	---	---	---	---	67	90	111	23'
24'	---	---	---	---	---	---	---	59	79	102	24'
25'	---	---	---	---	---	---	---	52	70	91	25'
26'	---	---	---	---	---	---	---	47	62	81	26'

NOTE—The above safe loads assume that the Joists are bridged laterally as in the standard floor construction.

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